1.1.3: Significant Figures

Consider this example:

Zubair wants to buy a car which cost about $68 955.
He tells his friend about it, but he cannot remember all the digits.
He says that it is about $70 000.

> In Mathematics, what he is doing is **rounding off** the original figure to a certain number of significant figures.

> Significant figures (Sig.Fig. in short) refers to the important digits (or figures) of a number.

> It is used to reflect the degree of accuracy.
> A number is more accurate if it is rounded off to a higher number of significant figures.

Basically, counting significant figures means counting how many digits there are in a number based on the following rules.

1	All **NON-ZERO** digits are counted, e.g. 142 563 -------> 6 Sig.Fig

2	**ZERO**	In **FRONT** is not counted, e.g. 0.04 -------> 1 Sig.Fig
		At the **BACK** is counted, e.g. 0.0400 -------> 3 Sig.Fig
		In the **MIDDLE** is counted, e.g. 0.04001 -------> 4 Sig.Fig

3	**WHOLE NUMBER**	For **WHOLE NUMBERS** digits omitted must be replaced by the same number of zeros

i.e 8<u>**7**</u>45 rounded off 2 sig.fig = 87**00** (NOT 87)
↓
2 sig.fig

i.e 8745.28 rounded off 3 sig.fig = 8750
(NOT 8750.00)

For decimals, the 'omitted' digits do not have to be replaced by zeros or otherwise the zeros will be counted.

Example 8
Round off 7630.50 to,

(a) 1 significant figure	**7 600**
(b) 2 significant figures	**8 000**
(c) 4 significant figures	**7 631**

Activity 1: Choose the right answer

Example 9
Write each of the following numbers correct to 3 significant figures.

(a) **20.453**   (b) **0.004368**   (c) **303 971**